Oct. 17, 1933. C. W. BLACKMUN 1,930,872

PERFUME ATOMIZER

Filed March 8, 1930

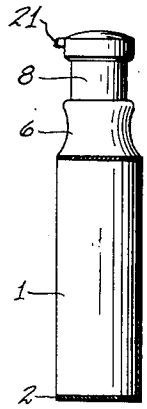


Fig. 1.

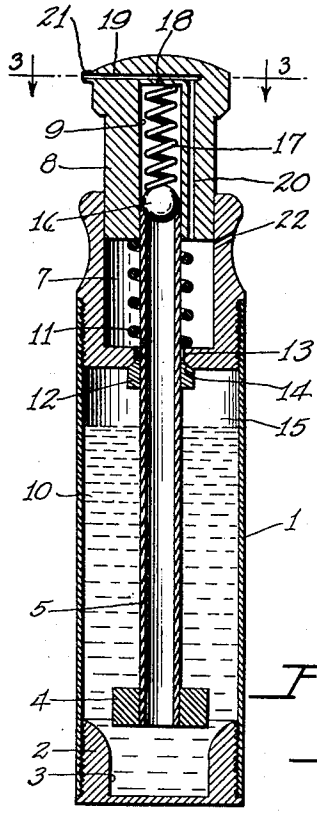


Fig. 2.

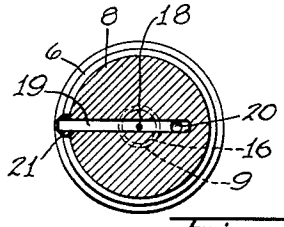


Fig. 3.

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PERFUME ATOMIZER

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3 Claims. (Cl. 299—89)

My invention relates to perfume atomizers, and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a perfume atomizer that may be made small and compact so as to be readily carried in a woman's purse. The device has novel means for sealing the contents against leakage into the purse.

A further object of my invention is to provide a device of the type described which has novel means for delivering a predetermined quantity of perfume each time the device is actuated. This means is adjustable so as to vary the quantity of perfume delivered. All of the perfume within the container will be used, and the mechanism is such as to cause perfume to be delivered on the first operation whether the device is entirely filled with perfume or only partially filled.

A still further object lies in the provision of means for delivering air to the container as the perfume is used, thus doing away with the forming of a vacuum, this same means also aiding in ejecting the perfume from the device and thoroughly atomizing the perfume thus ejected.

Other objects and advantages will appear as the specification proceeds, and the novel features of the device will be particularly pointed out in the claims hereto annexed.

My invention is illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of the device,

Figure 2 is a vertical section through the device, and

Figure 3 is a section along the line 3—3 of Figure 2.

In carrying out my invention, I provide a container having a wall 1 and a removable bottom 2. This bottom may be threaded into the wall 1 or frictionally held in place. The bottom 2 has a recess 3 therein designed to hold a predetermined amount of fluid such as perfume. The recess constitutes a cylinder and a piston 4 is movable into the cylinder by a means hereinafter described for forcing the fluid from the recess or reservoir 3 into a tubular member 5.

At the top of the container I mount a cover member 6, this member being threaded into the container 1. The member 6 has a bore 7 therein constituting a cylinder, and a plunger head 8 is slidable in the bore. The head 8 has a passageway 9 therein for the fluid 10 disposed in the container. The tubular member 5 has its upper end disposed in the passageway 9, and the member 5 is rigidly connected to the movable head 8. It will be seen from this construction that a reciprocation of the head 8 will move the piston 4 into and out of the recess 3.

A spring 11 urges the head 8 out of the cylinder 7, but this movement is limited by a valve 12 carried by the member 5 and normally closing an opening 13 in the lower part of the cover 6. The opening 13 has a valve seat 14 for receiving the valve 12. It should be noted that the member 5 is loosely received in the opening 13 in order to permit air to pass from the cylinder 7 into the compartment 15 for relieving any vacuum caused by the removal of the fluid from the compartment.

A ball valve 16 is yieldingly held on top of the member 5 by a spring 17, and retains a column of perfume in the member 5 after the device has been actuated and holds the perfume in the passage 9 that has already passed above the valve. In this way the device will project an atomized stream of perfume as soon as the head 8 is actuated, this perfume being furnished from the passageway 9.

An extremely small hole 18 connects the passageway 9 with an outlet passageway 19. The hole 18 shown in Figures 2 and 3 is small enough to cause only a minute stream of fluid to pass into the passageway 19. The stream of fluid in passing through the small opening 18 is broken up into fine particles, or, in other words, is atomized. An air passageway 20 in the head 8 communicates with the cylinder 7 and with the passageway 19. During the downward movement of the head 8, a certain amount of air will be forced through the passageways 20 and 19 and will further atomize the fluid entering the passageway 19. The air will also tend to eject the fluid from the nozzle 21 in an atomized stream. The cover 6 has an air passageway 22 leading from the atmosphere to the cylinder 7.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

In filling the device, the bottom 2 is removed and the device is inverted during the filling operation. The bottom may now be secured in place, and the device is now ready for use.

During the initial movement of the head 8, the valve 12 opens and permits air to enter the compartment to relieve any vacuum and the piston 4 traps a certain amount of fluid in the recess 3. Further movement of the piston into the recess causes this fluid to flow upwardly in the tube 5. The tube has a small enough fluid passageway in proportion to the amount of fluid trapped in the recess 3 to cause a certain portion of this fluid

to pass above the valve 16, which will open on the downward movement of the head 8 only after sufficient pressure is built up in the trapped fluid to overcome the spring pressed check valve 16. The instant the pressure of the fluid overbalances the spring-pressed check valve 16, the fluid will quickly flow through the passage 9 and the restricted passage 19 and will be atomized as it leaves the mouth piece 21.

Whether the head 8 is depressed rapidly or slowly, the fluid will not pass the valve 16 until a predetermined pressure is reached, and, therefore, the efficient operation of the device does not depend upon the rapid depressing of the head.

As soon as the downward movement of the head 8 stops, the spring valve 16 will instantly close because of exerting more pressure than that of the fluid, and will stop further flow of the fluid thereby. The previous pressure of the fluid has caused that portion leaving the mouth 21 to flow at a considerable speed. The instantaneous cutting-off of the fluid at the valve 16 will cause the portion just being ejected from the mouth 21 to draw with it all drops adhering to the nozzle 21. This will prevent dribbling. On the return movement of the head 8 to normal position caused by the spring 11, the valve 12 will seat and the head will uncover the passage 22 so as to allow air to enter the cylinder 7 until the pressure within the cylinder equals that of atmospheric pressure.

The reciprocation of the head 8 will cause the fluid to be forced through the atomizing opening 18 and then to be ejected from the nozzle 21 in the manner already described. The head 8 in its downward movement acts like a piston, because it first closes the opening 22 and then a further movement will cause the air trapped in the cylinder 7 to enter the compartment 15 to relieve the vacuum and the remaining air to pass through the passageways 20 and 19 so as to project the perfume from the nozzle 21 with a force sufficient to thoroughly atomize the perfume.

After the device has been used, it may be placed anywhere without any danger of leakage because the valve 12 provides a perfect seal for the compartment 15. The small opening 18 prevents any perfume in the passageway 9 from passing out through the nozzle 21 unless pressure is placed upon the perfume, which pressure is only caused by the actuation of the head 8. It should further be noted that the piston 4 is frictionally or otherwise adjustable on the tube 5 for varying the amount of perfume forced from the recess 3 into the tubular member 5. The lower cylinder 3 is automatically filled as soon as the piston 4 returns to normal position. The cone valve 12 not only prevents leakage, but permits air to enter the compartment 15. After the device has once been actuated, the perfume is disposed near enough to the nozzle 21 at all times to cause an atomized stream to be ejected from the nozzle on the first movement of the head 8.

Although I have shown and described one embodiment of my invention, it is to be understood that the same is susceptible of various changes, and I reserve the right to employ such changes as may come within the scope of the invention as claimed.

I claim:

1. An atomizer comprising a fluid container, a hollow cover closing the container and having a passageway normally placing the interior of the cover in communication with the atmosphere, a movable head carried by the cover said cover having a second passageway leading from the interior of the cover to the container, a valve for the second passageway and being operatively connected to the head, said head, when depressed, closing the first passageway and opening the valve for causing air to pass from the interior of the cover into the container.

2. An atomizer comprising a fluid container, a hollow cover having a passageway leading from the interior to the atmosphere and a second passageway leading from the interior to the container, a head movable in the cover and having an atomizing passageway, a tube communicating with the atomizing passageway, passing through the second cover passageway, and extending into the container, cooperating means carried by the tube and container for forcing a fluid into the tube when the head is actuated, a valve carried by the tube and normally closing the second cover passageway, said head when moved opening the valve and closing the first cover passageway for conveying air from the interior of the cover to the fluid atomizing passageway.

3. An atomizer comprising a fluid container, a hollow cover having a passageway leading from the interior to the atmosphere and a second passageway leading from the interior to the container, a head movable in the cover and having an atomizing passageway, a tube communicating with the atomizing passageway, passing through the second cover passageway, and extending into the container, cooperating means carried by the tube and container for forcing a fluid into the tube when the head is actuated, a valve carried by the tube and normally closing the second cover passageway, said head when moved opening the valve and closing the first cover passageway for conveying air from the interior of the cover to the fluid atomizing passageway, and a check valve disposed in the fluid atomizing passageway.

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